FIG. 1 System Level Overview of a Distributed Computer Network

GUI 104n

102n

GUI 104n-1

102n-1

GUI 104b

102b

GUI 104a

102a

Search 106a

Search 106b

Search 106x-1

Search 106x

108a 108b 108z-1 108z

100

NETWORK 112

110y

110y-1

110b

110a

PRIOR ART

WEB Browser Environment 202

The Invention 204

Graphical User Interface/Event Manager 206

Comparison Unit 210

Downloader Component 208

Result Set Manager 212

Search Engine 214

Scheme DTD DB 216

Mars Observer

File Edit View Menu Menu Menu Menu Menu Menu Help

Back Forward Stop Refresh Home Search Favorites History Channels Fullscreen Mail Print Edit

Address | http://www.altavista.com/cgi-bin/query?sc=on&q=mars+observer&k1=XX&pg=q&search.x=12&search.y=13

http://www.russiansscienceacademy.ru/marsleaders.html ⤳ 306a

http://www.nasa.gov/marsobserver.html ⤳ 302a

The Mars Polar Observer is expected to fly by by June 2001 containing an advanced scientific exploration package as well as a never before used ION propulsion system. It is this propulsion system which will save weight on liftoff and provide sufficient acceleration for the mission. In addition, scientific packages aboard the craft will further enhance our understanding of the origins of the solar system and the process of planetary formation by stellar accretion. Please inform you congressman of all the great things Nasa is doing so that we can receive more funding......

http://www.russianscienceacademy.ru/marsleaders.html ⤳ 304a

The Russian People will continue to support scientific study of the Planet Mars despite American advances in Mars science as shown by the recent launch of the Mars Observer...

Purchase Photos From The Hubble Telescope

Item 1 Item 2 Item 3

Item 1 Item 2 Item 3   1/12 33 XYZ XYZ

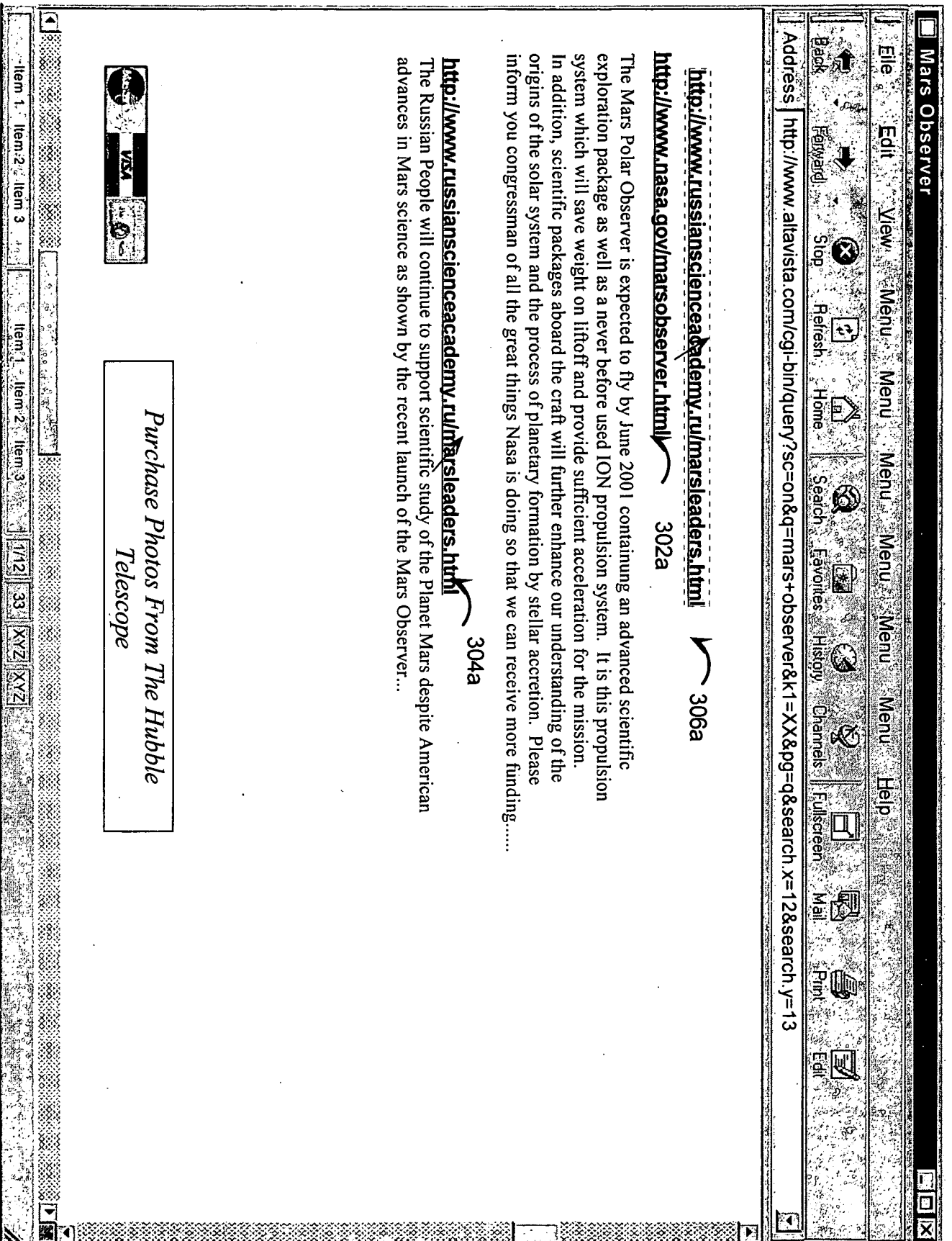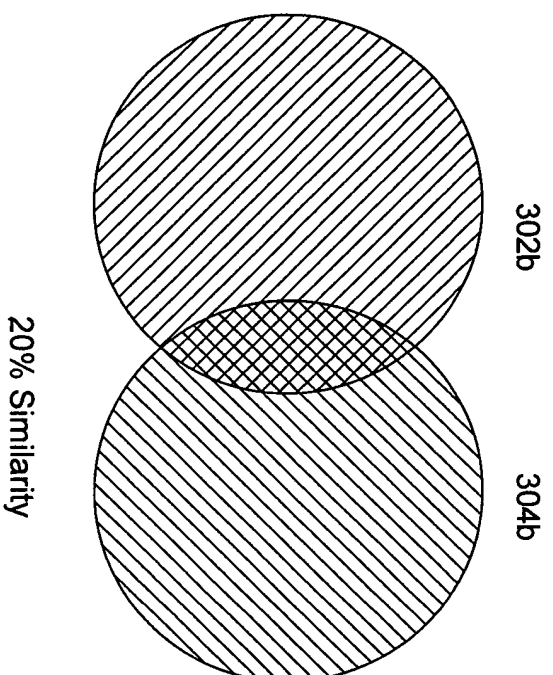FIG. 3a Graphical User Interface Showing Drag and Drop Feature
300a

FIG. 3b Venn Diagram Showing the Percentage Similarity Between Documents 1 and 2

300b

302b

304b

20% Similarity

FIG. 4 Functional Overview of a Graphical User Interface/Event Manager

<u>400</u>

```
        ╭─────────╮
        │  START  │
        ╰─────────╯
             │
             ▼                    ⌐402
    ┌─────────────────────┐
    │  Receive GUI Events │
    └─────────────────────┘
             │
             ▼                    ⌐404
    ┌─────────────────────┐
    │ Associate Event     │
    │ Handler with        │
    │ each Event          │
    └─────────────────────┘
             │
             ▼                    ⌐406
    ┌─────────────────────┐
    │ Source Item and     │
    │ Target Item are     │
    │ sent to Downloader  │
    │ Component           │
    └─────────────────────┘
             │
             ▼                    ⌐408
    ┌─────────────────────┐
    │ Receive Comparison  │
    │ Result              │
    └─────────────────────┘
             │
             ▼                    ⌐410
    ┌─────────────────────┐
    │ Visually Present    │
    │ Comparison Results  │
    └─────────────────────┘
             │
             ▼
        ╭─────────╮
        │   END   │
        ╰─────────╯
```

```
                         ┌─────────────┐
                         │    START    │
                         └─────────────┘
                                │
                                ▼
                    ┌──────────────────────┐  ⌐ 502
                    │  Receive Source and   │
                    │    Target Search      │
                    │        Item           │
                    └──────────────────────┘
                                │
                                ▼
                    ┌──────────────────────┐  ⌐ 504
                    │ Identify a Search     │
                    │ Result Item using an  │
                    │   Identifier URL 504  │
                    └──────────────────────┘
                                │
                                ▼
                    ┌──────────────────────┐  ⌐ 506
                    │ Select Appropriate    │
                    │ Transfer and Access   │
                    │       Protocol        │
                    └──────────────────────┘
                                │
                                ▼
                    ┌──────────────────────┐  ⌐ 508
                    │ Download the Document │
                    └──────────────────────┘
                                │
                                ▼
```

510   514

```
                          ◇─────────◇      NO      ┌──────────────────────┐
                         │ Retrieval  │──────────▶│ Notify GUI/Event      │
                         │ Successful?│            │ Manager of Failure    │
                          ◇─────────◇             └──────────────────────┘
                               │                             │
                              YES                            │
                               ▼                             │
                    ┌──────────────────────┐  ⌐ 512          │
                    │ Pass the Retrieved    │                │
                    │ Documents to the      │                │
                    │  Comparison Unit      │                │
                    └──────────────────────┘                │
                                │                            │
                                ▼                            │
                         ┌─────────────┐                    │
                         │     END     │◀───────────────────┘
                         └─────────────┘
```
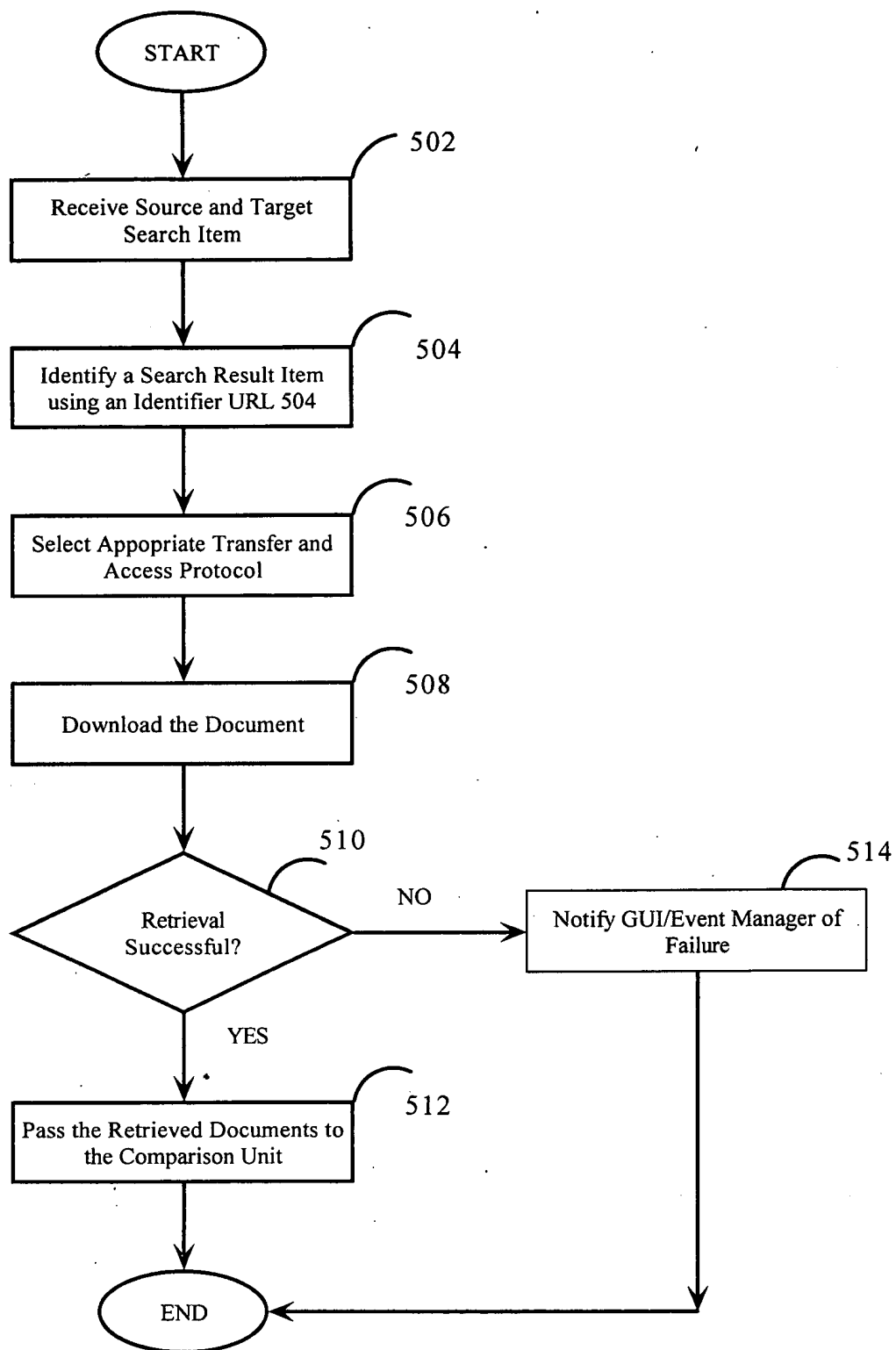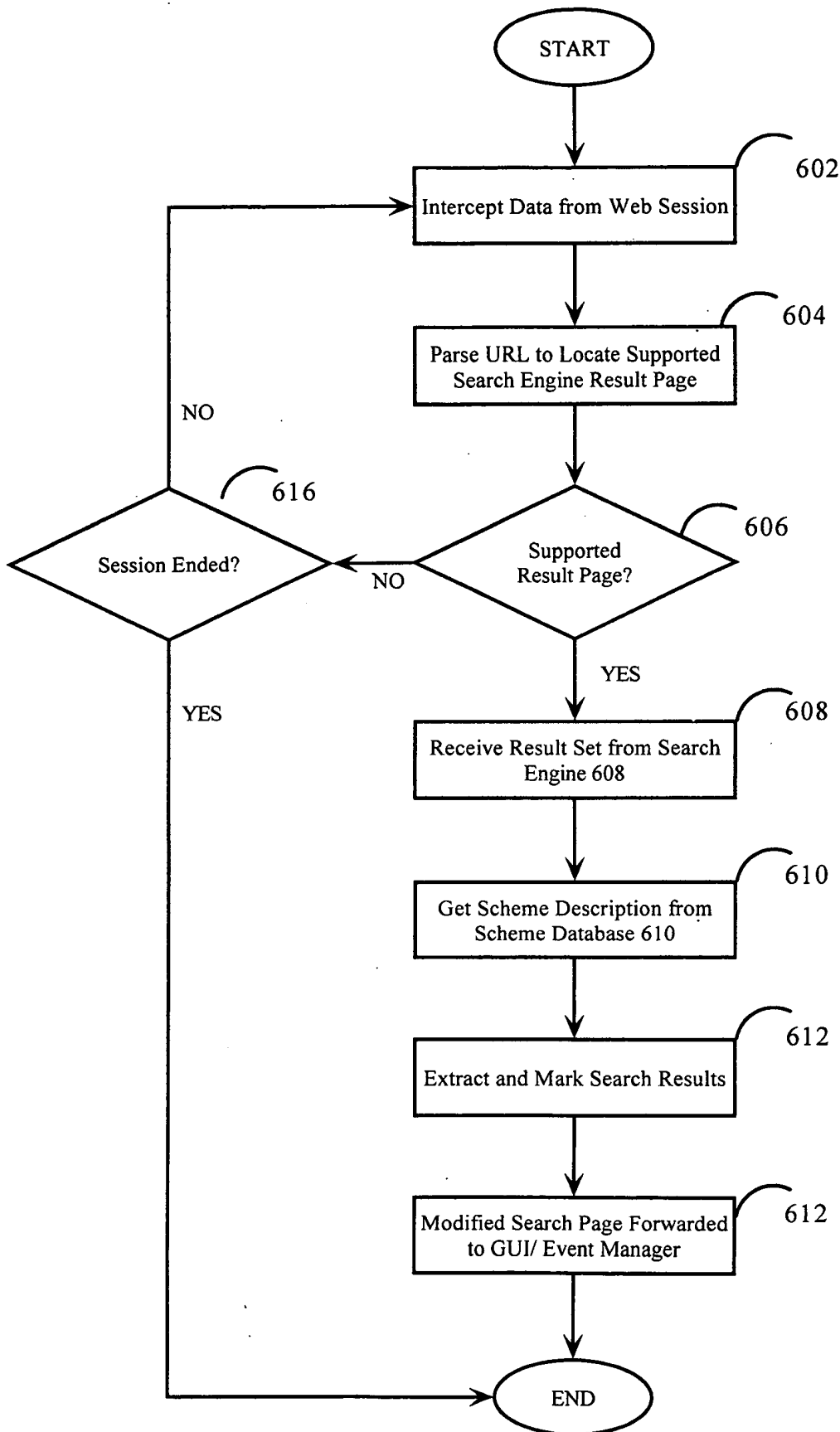
FIG. 5 Downloader Component Functional Overview

500

FIG. 6 Functional Overview for the Result Set Manager

600

```
                           ┌─────────┐
                           │  START  │
                           └────┬────┘
                                │
                                ▼
        ┌──────────────────────────────────────┐      602
   ┌───▶│   Intercept Data from Web Session     │
   │    └──────────────────┬───────────────────┘
   │                       │
   │                       ▼
   │    ┌──────────────────────────────────────┐      604
   │    │    Parse URL to Locate Supported      │
   │    │      Search Engine Result Page        │
   │    └──────────────────┬───────────────────┘
   │                       │
NO │                       ▼
   │              616            606
   │         ◇──────────◇   ◇──────────────◇
   │        ╱ Session    ╲ ╱    Supported   ╲
   │        ╲ Ended?     ╱◀╲  Result Page?  ╱
   │         ◇──────────◇ NO◇──────────────◇
   │              │                 │
   │           YES│              YES│
   │              │                 ▼
   │              │    ┌──────────────────────────────┐    608
   │              │    │  Receive Result Set from Search│
   │              │    │         Engine 608            │
   │              │    └───────────────┬──────────────┘
   │              │                    │
   │              │                    ▼
   │              │    ┌──────────────────────────────┐    610
   │              │    │   Get Scheme Description from  │
   │              │    │       Scheme Database 610      │
   │              │    └───────────────┬──────────────┘
   │              │                    │
   │              │                    ▼
   │              │    ┌──────────────────────────────┐    612
   │              │    │   Extract and Mark Search Results│
   │              │    └───────────────┬──────────────┘
   │              │                    │
   │              │                    ▼
   │              │    ┌──────────────────────────────┐    612
   │              │    │  Modified Search Page Forwarded│
   │              │    │       to GUI/ Event Manager    │
   │              │    └───────────────┬──────────────┘
   │              │                    │
   │              ▼                    ▼
   │            ┌─────────────────────────┐
   │            │          END            │
   │            └─────────────────────────┘
```
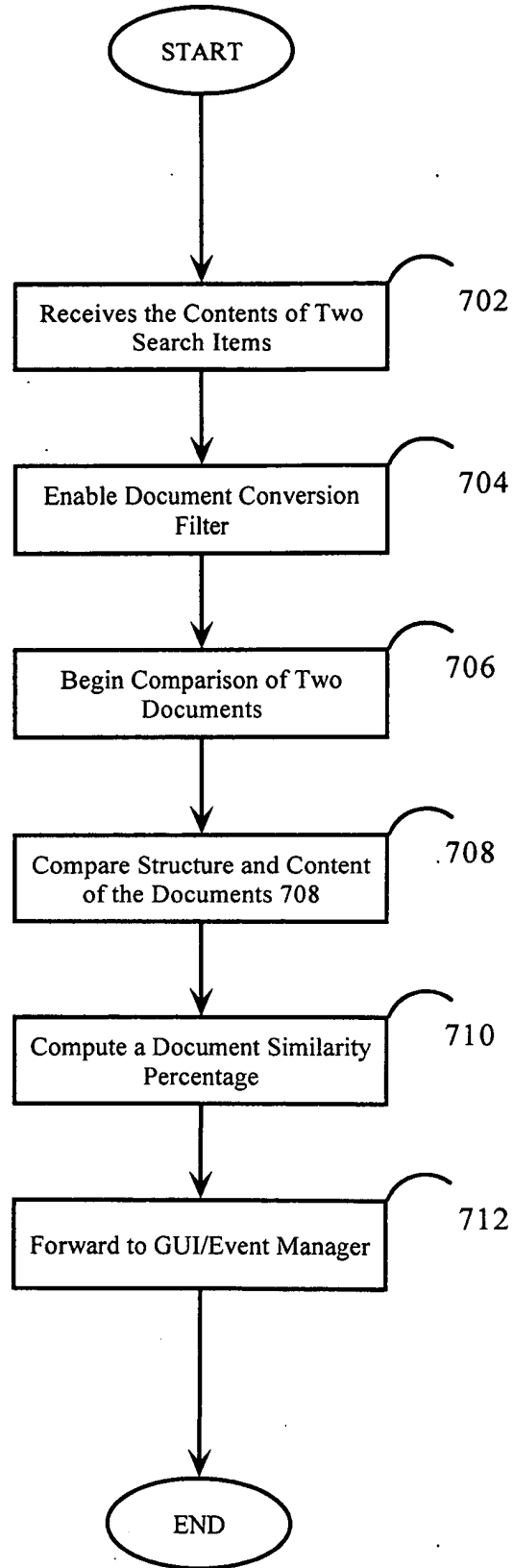
FIG. 7 Functional Overview of the Comparision Unit

700

```
                            ┌─────────────┐
                            │    START    │
                            └─────────────┘
                                   │
                                   ▼
                    ┌──────────────────────────┐
                    │ Receives the Contents of Two │  702
                    │       Search Items        │
                    └──────────────────────────┘
                                   │
                                   ▼
                    ┌──────────────────────────┐
                    │ Enable Document Conversion │  704
                    │          Filter           │
                    └──────────────────────────┘
                                   │
                                   ▼
                    ┌──────────────────────────┐
                    │  Begin Comparison of Two  │  706
                    │        Documents          │
                    └──────────────────────────┘
                                   │
                                   ▼
                    ┌──────────────────────────┐
                    │ Compare Structure and Content │  708
                    │   of the Documents 708    │
                    └──────────────────────────┘
                                   │
                                   ▼
                    ┌──────────────────────────┐
                    │ Compute a Document Similarity │  710
                    │        Percentage         │
                    └──────────────────────────┘
                                   │
                                   ▼
                    ┌──────────────────────────┐
                    │  Forward to GUI/Event Manager │  712
                    └──────────────────────────┘
                                   │
                                   ▼
                            ┌─────────────┐
                            │     END     │
                            └─────────────┘
```

START

User Enters a Search Query 802

Search Result Returned 804

Search Engine Supported 806

END

NO

YES

Result Set Manager Parses Search Result Data 808

Identify Search Result Items and Mark Them 810

Retrieve Structure & Content of Result Set from Scheme DB 812

Pass Marked Data to GUI/Event Manager 814

GUI/Event Manager Associates Event Handlers to Each Result 816

Display Enhanced Result Set in Browser 818

A

FIG. 8 Functional Overview of the Entire Process for Document Comparison

A

User Starts Selection Process &
Event Handler Notified — 820

Drag & Drop Mechanism Used to
Drag Item to Another Item — 822

GUI/Event Handler Receives
Notification w/Source & Target — 824

Forward Search Items to
Downloader Component — 826

Downloader Tries to Access &
Retrieve Documents — 828

Retrieval
Possible? 830 — 830

NO

Error Message Sent to GUI/Event
Handler

840

END

YES

832

Forward Data to Comparison
Unit

834

Comparison Unit Receives Data
& Starts Comparison

Similarity Computed &
Forwarded to GUI/Event Manager — 836

Generate a Graphical Display of
Similarity — 838

END